MCFARLAND OUTDOOR AIR INVESTIGATION

(Fact sheet 2 of 2)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY • REGION IX • OCTOBER 2004

Results of Air Sampling

This fact sheet discusses the air sampling results of the McFarland outdoor air investigation that was carried out by the United States Environmental Protection Agency (U.S. EPA). The results of the particulate matter air monitoring were reported in the July 2004 McFarland Outdoor Air Investigation fact sheet. This fact sheet provides an overview of the air sampling, the use of screening levels, and the air sampling results.

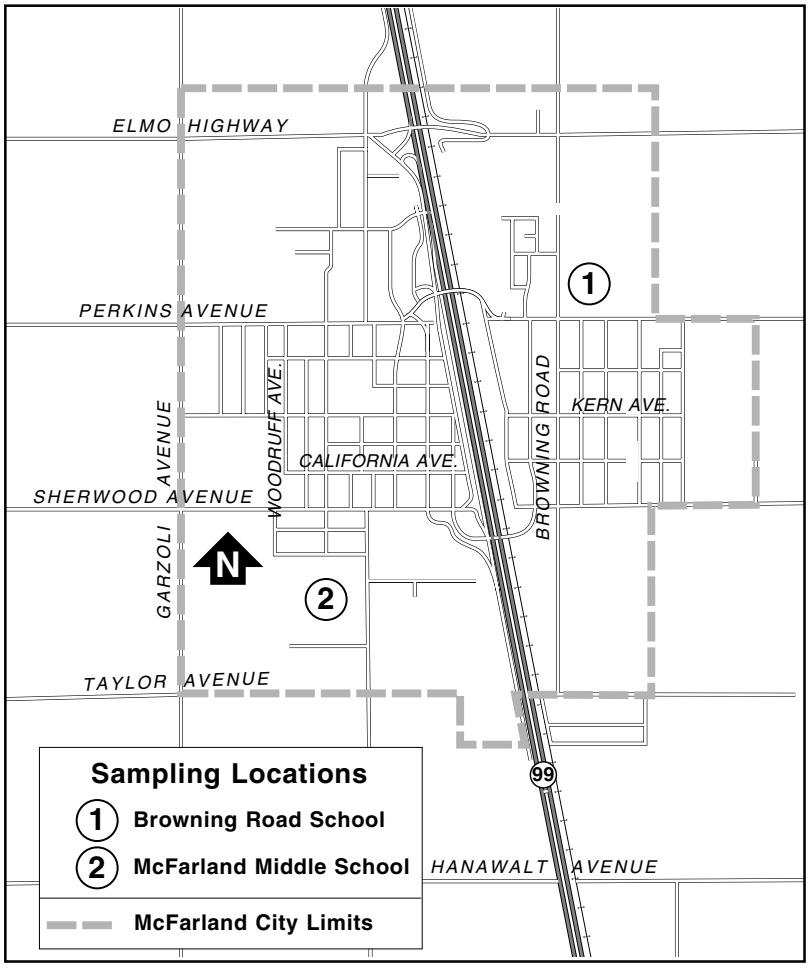
We encourage you to attend the Open House, on Monday, November 8th, 2004 at the McFarland Middle School Multipurpose Room from 4:00 to 7:00 p.m., where we will present all of the results and be available to address your comments and questions.

OVERVIEW OF THE AIR SAMPLING

The outdoor air sampling was conducted from McFarland Middle School and Browning Road School during different agricultural seasons: July 2001, December 2001-January 2002, March 2002, and May 2002. We tested 145 chemicals and took more than 900 samples, making this one of the largest outdoor air sampling projects undertaken in the San Joaquin Valley by the U.S. EPA.

We also included limited indoor dust sampling to see if chemicals from the outdoor air were also present in the indoor environment.

Almost half of the chemicals tested in the outdoor air were not detected in any of the samples collected at either the McFarland Middle School or the Browning Road School. Those that were detected one or more times were within **U.S. EPA's protective health range.**



Outdoor Air Sampling Locations

WHAT IS U.S. EPA'S PROTECTIVE HEALTH RANGE?

The protective health range for a chemical that can cause or increase the incidence of cancer is the concentration of the chemical in the environment that U.S. EPA considers protective of human health in the event of a long-term (30 years or more) exposure for community members, including sensitive groups (e.g., children). When the concentration of the chemical is within the protective health range, the available scientific data indicate that the concentration does not pose a significant immediate or long-term risk from exposure.

WHAT ARE SCREENING LEVELS?

Screening levels are specific concentrations of chemicals that are compared with sample results to determine if further assessment is needed. The McFarland outdoor air screening levels were developed using the toxicity values for each chemical and the assumption that children and other sensitive members of the community could be exposed to the chemical by breathing the air for at least 30 years.

Screening levels are designed to be very protective of human health. Thus, the presence of the chemicals detected in McFarland above their respective screening level does not necessarily mean that these chemicals pose a significant health risk.

INVESTIGATION HISTORY

In 1997, U.S. EPA began evaluating the current environmental conditions in McFarland, California in response to a request by residents. We investigated three ways through which contamination can potentially affect people (drinking water, soil and air). Air was investigated last, following the drinking water and soil investigations that were conducted from 1997-2000.

DETECTIONS IN OUTDOOR AIR

U.S. EPA uses screening levels to distinguish concentrations of chemicals in air that warrant further assessment from those that clearly do not pose a significant health risk. Of the 145 chemicals tested during the sampling, 66 were not detected at all and 68 were present at concentrations that were below their screening levels. The remaining 11 chemicals that were found one or more times above their screening levels were subjected to further assessment and consideration. All 11 were determined to be present at concentrations in air that are within U.S. EPA's protective health range (protective for long term community exposures). Most were found to be at concentrations typical of other areas in California where routine monitoring is conducted. Following is a discussion of the 11 chemicals that were detected at concentrations above their screening level but within the protective health range.

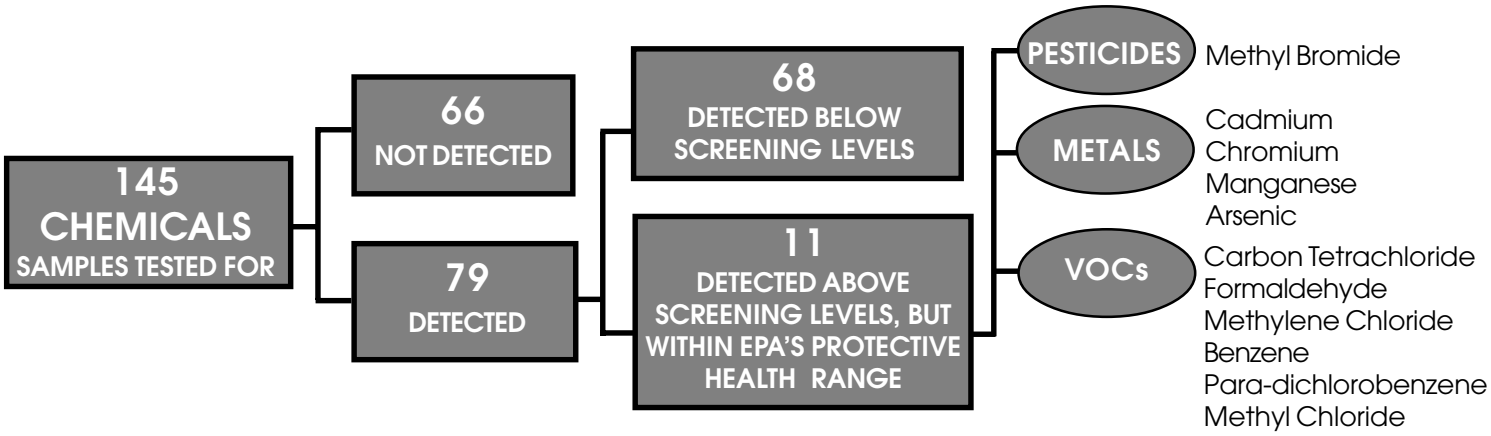
Ten of the 11 chemicals are described here. Of these chemicals, one is a pesticide, four are metals, and five are volatile organic compounds. Formaldehyde is discussed separately because, although still within the protective health range, the concentrations in McFarland may be higher than elsewhere in California.

Pesticides

Methyl bromide was the only pesticide found above its screening level. Historically, methyl bromide has been used much more heavily during times of the year that did not coincide with periods when U.S. EPA was able to sample. Therefore, it could be present at higher concentrations than what was found during our sampling periods.

Metals

We detected four different metals at concentrations that were above their screening level but within the protective health range: arsenic, cadmium, manganese and chromium. The highest concentrations for all these metals occurred during a dust storm in May 2002 that created high levels of particulates in the air. Metals may be naturally-occurring elements of soil, may be present in suspended dust from pesticides, or come from other sources of pollution such as road dust and manufacturing processes.



Volatile Organic Compounds (VOCs)

VOCs are chemicals that evaporate readily in the air. We detected five different VOCs that were above their screening level but within the protective health range: benzene, carbon tetrachloride, methyl chloride, methylene chloride, and para-dichlorobenzene.

FORMALDEHYDE

Although within the protective health range, the concentrations of formaldehyde in the air in McFarland were approximately two times higher than the average concentrations in urban areas such as Bakersfield and Fresno. Higher concentrations of formaldehyde have also been observed in other rural Central Valley towns as compared to urban areas in California.

In McFarland, formaldehyde may potentially come from, but is not limited to, vehicles emissions, livestock wastes[1], some pesticides formulations and composite wood products. In addition formaldehyde can be formed in the atmosphere from other chemicals.

INDOOR DUST

To support the air investigation, we included limited indoor dust sampling to determine if pesticides and other chemicals were present in the indoor environment. Dust samples were collected at Browning Road and McFarland Middle Schools during December 2001/January 2002 and May/June 2002 to coincide with two of the outdoor air sampling events.

What did we find?

We detected 32 out of 102 chemicals we tested for in indoor dust. Of those that were detected, all were within the protective health range and most were present at concentrations below their screening level.

In four samples, dioxins/furans/PCBs were detected above their respective screening levels. However, these concentrations were also within the protective health range.

NEXT STEPS

We will present all of the results of the air investigation and be available to address your comments and questions at the Open House on Monday, November 8th, 2004 at the McFarland Middle School Multipurpose Room, from 4:00 pm to 7:00 pm.

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[1] *Schmidt, C. E., Winegar, E., 1996, Technical Report- Results of the Measurement of PM10 Precursor Compounds from Dairy Industry Livestock Waste: Summer Testing Event and Winter Testing Event, South Coast Air Quality Management District, Diamond Bar, CA*

Schiffman S. S., Auvermann, B. W., Bottcher, R.W. 2001; Health Effects Of Aerial Emissions From Animal Production and Waste Management Systems in White Paper Summaries National Center for Manure and Animal Waste Management, December 11, 2001.

INFORMATION CENTERS

Superfund Records Center
EPA Region 9
95 Hawthorne Street, Suite 403S
San Francisco, CA 94105
(415) 536-2000

Kern County Public Library
McFarland Branch
500 Kern Avenue
McFarland, CA 93250
(661) 792-2318

Beale Memorial Library
Local History Room
701 Truxten Avenue
Bakersfield, CA 93301
(661) 861-2136

U.S. EPA OPEN HOUSE

Monday, November 8, 2004 • 4:00 to 7:00 p.m.
McFarland Middle School • Multipurpose Room
405 Mast Avenue, McFarland, CA 93250

FOR MORE INFORMATION

If you have questions about the McFarland Investigation, please do not hesitate to contact any of the people listed below:

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U.S. Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105

Or call EPA's toll-free number, **(800) 231-3075**, and your message will be returned.

U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street (SFD-3)
San Francisco, CA 94105-3901
Attn: Héctor Aguirre (McFarland #2 of 2)

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